

SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: O'Donnell, Michael
- (ii) TITLE OF INVENTION: DNA POLYMERASE III HOLOENZYME
- (iii) NUMBER OF SEQUENCES: 60
- (iv) CORRESPONDENCE ADDRESS:
  - (A) ADDRESSEE: Nixon, Hargrave, Devans & Doyle LLP
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  - (C) CITY: Rochester
  - (D) STATE: New York
  - (E) COUNTRY: U.S.A.
  - (F) ZIP: 14603
- (v) COMPUTER READABLE FORM:
  - (A) MEDIUM TYPE: Floppy disk
  - (B) COMPUTER: IBM PC compatible
  - (C) OPERATING SYSTEM: PC-DOS/MS-DOS
  - (D) SOFTWARE: PatentIn Release #1.0, Version #1.30
- (vi) CURRENT APPLICATION DATA:
  - (A) APPLICATION NUMBER: US 08/828,323
  - (B) FILING DATE: 28-MAR-1997
  - (C) CLASSIFICATION:
- (viii) ATTORNEY/AGENT INFORMATION:
  - (A) NAME: Goldman, Michael L.
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  - (C) REFERENCE/DOCKET NUMBER: 19603/10213
- (ix) TELECOMMUNICATION INFORMATION:
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(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 28 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Met Leu Arg Leu Tyr Pro Glu Gln Leu Arg Ala Gln Leu Asn Glu Gly  
1 5 10 15

Leu Arg Ala Ala Tyr Leu Leu Gly Asn Asp Pro  
20 25

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Ala Ala Tyr Leu Leu Leu Gly Asn Asp Pro Leu Leu Leu Gln Glu Ser  
1 5 10 15

Gln Asp Ala Val Arg  
20

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Ala Gln Glu Asn Ala Ala Trp Phe Thr Ala Leu Ala Asn Arg  
1 5 10

## (2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 24 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Val Glu Gln Ala Val Asn Asp Ala Ala His Phe Thr Pro Phe His Trp  
1 5 10 15

Val Asp Ala Leu Leu Met Gly Lys  
20

## (2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 33 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

GTACAACCGA ATCATATGTT ACCCAGCGAG CTC

33

## (2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

*B*

- (A) LENGTH: 1032 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

ATGATTCTGGT	TGTACCCGGA	ACAACTCCGC	GCGCAGCTCA	ATGAAGGGCT	GCGCGCGCG	60
TATCTTTAC	TTGGTAAACGA	TCCTCTGTTA	TTGCAGGAAA	GCCAGGACGC	TGTCGTCAG	120
GTAGCTGCGG	CACAAGGATT	CGAAGAACAC	CACACTTTT	CCATTGATCC	CAACACTGAC	180
TGGAATGCGA	TCTTTCGTT	ATGCCAGGCT	ATGAGTCTGT	TTGCCAGTCG	ACAAACGCTA	240
TTGCTGTTGT	TACCAGAAAA	CGGACCGAAT	GCAGGCGATCA	ATGAGCAACT	TCTCACACTC	300
ACCGGACTTC	TGCATGACGA	CCTGCTGTTG	ATCGTCCGCG	GTAATAAATT	AAGCAAAGCG	360
CAAGAAAATG	CCGCCTGGTT	TACTGCGCTT	GCGAATCGCA	GCGTGCAGGT	GACCTGTCAG	420
ACACCGGAGC	AGGCTCAGCT	TCCCCGCTGG	GTTGCTGCGC	GCGCAAAACA	GCTCAACTTA	480
GAACCTGGATG	ACGCGGCAAA	TCAGGTGCTC	TGCTACTGTT	ATGAAGGTAA	CCTGCTGGCG	540
CTGGCTCAGG	CACTGGAGCG	TTTATCGCTG	CTCTGGCCAG	ACGGCAAATT	GACATTACCG	600
CGCGTTGAAC	AGGCGGTGAA	TGATGCCGCG	CATTTCACCC	CTTTTCATTG	GGTTGATGCT	660
TTGTTGATGG	AAAAAAAGTAA	GCGCGCATTG	CATATTCTTC	AGCAACTGCG	TCTGGAAGGC	720
AGCGAACCGG	TTATTTGTT	GCGCACATTA	CAACGTGAAC	TGTTGTTACT	GGTTAACCTG	780
AAACGCCAGT	CTGCCCATAC	GCCACTGCGT	GCGTGTGTTG	ATAAGCATCG	GGTATGGCAG	840
AACCGCCGGG	GCATGATGGG	CGAGGCGTTA	AATCGCTTAA	GTCAGACGCA	GTTACGTCAG	900
GCCGTGCAAC	TCCTGACACG	AACGGAACTC	ACCCCTAACAC	AAGATTACGG	TCAGTCAGTG	960
TGGGCAGAGC	TGGAAGGGTT	ATCTCTTCTG	TTGTGCCATA	AACCCCTGGC	GGACGTATTT	1020
ATCGACGGTT	GA					1032

(2) INFORMATION FOR SEQ ID NO:7:

- (i) SEQUENCE CHARACTERISTICS:

  - (A) LENGTH: 127 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

CCGAACAGCT GATTGTAAG CTGCCAAGCA TCCGTGCTGC GGATATTCGT TCCGACGAAG	60
AACAGACGTC GACCACAAACG GATACTCCGG CAACGCCTGC ACGCGTCTCC ACCACGCTGG	120
GTAACGT	127

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 102 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

TATGAAATCT TTACAGGCTC TGTGCGGG CACCTTGAT CCGGTGCACT ATGGTCATCT	60
AAAACCCGTT GGAAGCGTGG CCGAAGTTT GATTGGTCTG AC	102

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 343 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Met Ile Arg Leu Tyr Pro Glu Gln Leu Arg Ala Gln Leu Asn Glu Gly	
1 5 10 15	

B  
 Leu Arg Ala Ala Tyr Leu Leu Leu Gly Asn Asp Pro Leu Leu Leu Gln  
 20 25 30  
 Glu Ser Gln Asp Ala Val Arg Gln Val Ala Ala Ala Gln Gly Phe Glu  
 35 40 45  
 Glu His His Thr Phe Ser Ile Asp Pro Asn Thr Asp Trp Asn Ala Ile  
 50 55 60  
 Phe Ser Leu Cys Gln Ala Met Ser Leu Phe Ala Ser Arg Gln Thr Leu  
 65 70 75 80  
 Leu Leu Leu Pro Glu Asn Gly Pro Asn Ala Ala Ile Asn Glu Gln  
 85 90 95  
 Leu Leu Thr Leu Thr Gly Leu Leu His Asp Asp Leu Leu Leu Ile Val  
 100 105 110  
 Arg Gly Asn Lys Leu Ser Lys Ala Gln Glu Asn Ala Ala Trp Phe Thr  
 115 120 125  
 Ala Leu Ala Asn Arg Ser Val Gln Val Thr Cys Gln Thr Pro Glu Gln  
 130 135 140  
 Ala Gln Leu Pro Arg Trp Val Ala Ala Arg Ala Lys Gln Leu Asn Leu  
 145 150 155 160  
 Glu Leu Asp Asp Ala Ala Asn Gln Val Leu Cys Tyr Cys Tyr Glu Gly  
 165 170 175  
 Asn Leu Leu Asn Leu Ala Gln Ala Leu Glu Arg Leu Ser Leu Leu Trp  
 180 185 190  
 Pro Asp Gly Lys Leu Thr Leu Pro Arg Val Glu Gln Ala Val Asn Asp  
 195 200 205  
 Ala Ala His Phe Thr Pro Phe His Trp Val Asp Ala Leu Leu Met Gly  
 210 215 220  
 Lys Ser Lys Arg Ala Leu His Ile Leu Gln Gln Leu Arg Leu Gly Gly  
 225 230 235 240  
 Ser Glu Pro Val Ile Leu Leu Arg Thr Leu Gln Arg Glu Leu Leu Leu  
 245 250 255  
 Leu Val Asn Leu Lys Arg Gln Ser Ala His Thr Pro Leu Arg Ala Leu  
 260 265 270

Phe Asp Lys His Arg Val Trp Gln Asn Arg Arg Gly Met Met Gly Glu  
 275 280 285

Ala Leu Asn Arg Leu Ser Gln Thr Gln Leu Arg Gln Ala Val Gln Leu  
 290 295 300

Leu Thr Arg Thr Glu Leu Thr Leu Lys Gln Asp Tyr Gly Gln Ser Val  
 305 310 315 320

Trp Ala Glu Leu Glu Gly Leu Ser Leu Leu Cys His Lys Pro Leu  
 325 330 335

Ala Asp Val Phe Ile Asp Gly  
 340

## (2) INFORMATION FOR SEQ ID NO:10:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 334 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Met Arg Trp Tyr Pro Trp Leu Arg Pro Asp Phe Glu Lys Leu Val Ala  
 1 5 10 15

Ser Tyr Gln Ala Gly Arg Gly His His Ala Leu Leu Ile Gln Ala Leu  
 20 25 30

Pro Gly Met Gly Asp Asp Ala Leu Ile Tyr Ala Leu Ser Arg Tyr Leu  
 35 40 45

Leu Cys Gln Gln Pro Gln Gly His Lys Ser Cys Gly His Cys Arg Gly  
 50 55 60

Cys Gln Leu Met Gln Ala Gly Thr His Pro Asp Tyr Tyr Thr Leu Ala  
 65 70 75 80

Pro Glu Lys Gly Lys Asn Thr Leu Gly Val Asp Ala Val Arg Glu Val  
 85 90 95

Thr Glu Lys Leu Asn Glu His Ala Arg Leu Gly Gly Ala Lys Val Val  
 100 105 110

Trp Val Thr Asp Ala Ala Leu Leu Thr Asp Ala Ala Ala Asn Ala Leu  
 115 120 125

Leu Lys Thr Leu Glu Glu Pro Pro Ala Glu Thr Trp Phe Phe Leu Ala  
 130 135 140

Thr Arg Glu Pro Glu Arg Leu Leu Ala Thr Leu Arg Ser Arg Cys Arg  
 145 150 155 160

Leu His Tyr Leu Ala Pro Pro Glu Gln Tyr Ala Val Thr Trp Leu  
 165 170 175

Ser Arg Glu Val Thr Met Ser Gln Asp Ala Leu Leu Ala Ala Leu Arg  
 180 185 190

Leu Ser Ala Gly Ser Pro Gly Ala Ala Leu Ala Leu Phe Gln Gly Asp  
 195 200 205

Asn Trp Gln Ala Arg Glu Thr Leu Cys Gln Ala Leu Ala Tyr Ser Val  
 210 215 220

Pro Ser Gly Asp Trp Tyr Ser Leu Leu Ala Ala Leu Asn His Glu Gln  
 225 230 235 240

Ala Pro Ala Arg Leu His Trp Leu Ala Thr Leu Leu Met Asp Ala Leu  
 245 250 255

Lys Arg His His Gly Ala Ala Gln Val Thr Asn Val Asp Val Pro Gly  
 260 265 270

Leu Val Ala Glu Leu Ala Asn His Leu Ser Pro Ser Arg Leu Gln Ala  
 275 280 285

Ile Leu Gly Asp Val Cys His Ile Arg Glu Gln Leu Met Ser Val Thr  
 290 295 300

Gly Ile Asn Arg Glu Leu Leu Ile Thr Asp Leu Leu Leu Arg Ile Glu  
 305 310 315 320

His Tyr Leu Gln Pro Gly Val Val Leu Pro Val Pro His Leu  
 325 330

## (2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 57 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

ACTCTGGAAG AACCGCCGGC TGAAACTTGG TTTTTTCTGG CTACTCGTGA ACCGGAA

57

## (2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 54 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

GCTGGTTCTC CGGGTGCTGC TCTGGCTCTG TTTCAGGGTG ATGACTGGCA GGCT

54

## (2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 1002 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

ATGAGATGGT ATCCATGGTT ACGACCTGAT TTGAAAAAC TGGTAGCCAG CTATCAGGCC

60

GGAAGAGGGTC ACCATGCGCT ACTCATTCAAG GCGTTACCGG GCATGGCGA TGATGCTTTA

120

ATCTACGCC TGAGCCGTTA TTTACTCTGC CAACAACCGC AGGGCCACAA AAGTTGCGGT 180  
 CACTGTCGTG GATGTCAGTT GATGCAGGCT GGCACGCATC CCGATTACTA CACCCCTGGCT 240  
 CCCGAAAAAG GAAAAAAATAC GCTGGGCGTT GATGCGGTAC GTGAGGTCAC CGAAAAGCTG 300  
 AATGAGCACG CACGCTTAGG TGGTGCAGAA GTCGTTGGG TAACCGATGC TGCCTTACTA 360  
 ACCGACGCCG CGGCTAACGC ATTGCTGAAA ACGCTTGAAG AGCCACCAGC AGAAACTTGG 420  
 TTTTCCTGG CTACCCCGGA GCCTGAACGT TTACTGGCAA CATTACGTAG TCGTTGTCGG 480  
 TTACATTACC TTGCGCCGCC GCCGGAACAG TACGCCGTGA CCTGGCTTTC ACGCGAAGTG 540  
 ACAATGTCAC AGGATGCATT ACTTGCCGCA TTGCGCTTAA GCGCCGGTTC GCCTGGCGCG 600  
 GCACTGGCGT TGTTTCAGGG AGATAACTGG CAGGCTCGTG AAACATTGTG TCAGGCGTTG 660  
 GCATATAGCG TGCCATCGGG CGATTGGTAT TCGCTGCTAG CGGCCCTTAA TCATGAACAA 720  
 GTCCCGGCGC GTTTACACTG GCTGGCAACG TTGCTGATGG ATGCGCTAAA ACGCCATCAT 780  
 GGTGCTGCGC AGGTGACCAA TGTTGATGTG CCGGGCCTGG TCGCCGAACGGCAAACCAT 840  
 CTTTCTCCCT CGCGCCTGCA GGCTATACTG GGGGATGTTT GCCACATTG TGAAACAGTTA 900  
 ATGTCTGTTA CAGGCATCAA CCGCGAGCTT CTCATCACCG ATCTTTACT GCGTATTGAG 960  
 CATTACCTGC AACCGGGCGT TGTGCTACCG GTTCCTCATC TT 1002

## (2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 157 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

AAGAATCTTT CGATTCTTT AATCGCACCC GCGCCCGCTA TCTGGAACGT GCAGCACAAG 60  
 ATAAAAAGCAT TCATACCATT GATGCCACCC AGCCGCTGGA GGCCGTGATG GATGCAATCC 120  
 GCACTACCGT GACCCACTGG GTGAAGGAGT TGGACGC 157

## (2) INFORMATION FOR SEQ ID NO:15:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 143 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

TTAGAGAGAC ATCATGTTT TAGTGGACTC ACAC TGCCAT CTCGATGGTC TGGATTATGA	60
ATCTTGAT AAGGACGTGG ATGACGTTCT GGC GAAAGCC GCCGCACGCG ATGTGAAATT	120
TTGTCTGGCA GTCGCCACAA CAT	143

## (2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Met Arg Trp Tyr Pro Pro Leu Arg Pro Asp Phe Glu Lys Leu Val Ala			
1	5	10	15

## (2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 11 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Glu Val Thr Glu Lys Leu Asn Glu His Ala Arg  
1 5 10

## (2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 20 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Val Val Trp Val Thr Asp Ala Ala Leu Leu Thr Asp Ala Ala Ala Asn  
1 5 10 15

Ala Leu Leu Lys  
20

## (2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 25 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Thr Leu Glu Glu Pro Pro Ala Glu Thr Trp Phe Phe Leu Ala Thr Arg  
1 5 10 15

Glu Pro Glu Arg Leu Leu Ala Thr Leu  
20 25

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Leu His Tyr Leu Ala Pro Pro Pro Glu Gln Tyr Ala Val Thr Trp Leu  
1 5 10 15

Ser Arg

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Leu Ser Ala Gly Ser Pro Gly Ala Ala Leu Ala Leu Phe Gln Gly Asp  
1 5 10 15

Asn Trp Gln Ala Arg  
20

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 5 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Leu Gly Gly Ala Lys  
1 5

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 58 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Ala Cys Thr Cys Thr Gly Gly Ala Ala Gly Ala Ala Cys Cys Gly Cys  
1 5 10 15

Cys Gly Gly Cys Thr Thr Gly Ala Ala Ala Cys Thr Thr Gly Gly Thr  
20 25 30

Thr Thr Thr Thr Cys Thr Gly Gly Cys Thr Ala Cys Thr Cys Gly  
35 40 45

Thr Gly Ala Ala Cys Cys Gly Gly Ala Ala  
50 55

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 54 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Gly Cys Thr Gly Gly Thr Thr Cys Thr Cys Cys Gly Gly Thr Gly  
1 5 10 15

Cys Thr Gly Cys Thr Cys Thr Gly Gly Cys Thr Cys Thr Gly Thr Thr  
20 25 30

Thr Cys Ala Gly Gly Thr Gly Ala Thr Ala Ala Cys Thr Gly Gly  
35 40 45

Cys Ala Gly Gly Cys Thr  
50

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 33 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Gly Gly Thr Gly Ala Ala Gly Gly Ala Gly Thr Thr Gly Gly Ala Cys  
1 5 10 15

Ala Thr Ala Thr Gly Ala Gly Ala Thr Gly Gly Thr Ala Thr Cys Cys  
20 25 30

Ala

(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 40 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Met Leu Lys Asn Leu Ala Lys Leu Asp Gln Thr Glu Met Asp Lys Val  
1 5 10 15

Asn Val Asp Leu Ala Ala Gly Val Ala Phe Lys Glu Arg Tyr Asn  
20 25 30

Met Pro Val Ile Ala Glu Ala Val  
35 40

## (2) INFORMATION FOR SEQ ID NO:27:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 57 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

ATGCTGAAAA ACCTGGCTAA ACTGGATCAG ACTGAAATGG ATAAAGTTAA CGTTGAT

57

## (2) INFORMATION FOR SEQ ID NO:28:

## (i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 57 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

CTGGCTGCTG CTGGTGTGCT TTTTAAGGAA CGTTATAACA TGCCGGTTAT TGCTGAA

57

## (2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 228 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

ATGCTGAAGA ATCTGGCTAA ACTGGATCAA ACAGAAATGG ATAAAGTCAA TGTCGATTTG	60
CGGGCGGCCG GGGTGGCATT TAAAGAACGC TACAATATGC CGGTGATCGC TGAAGCGGTT	120
GAACGTGAAC AGCCTGAACA TTTGCGCAGC TGGTTTCGCG AGCGGCTTAT TGCCCACCGT	180
TTGGCTTCGG TCAATCTGTC ACGTTTACCT TACGAGCCCA AACTTAAA	228

## (2) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 172 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

AGGCGTAGCG AAGGGAGCGT GCAGTTGAAG CCATATTATC TATTCTTT TGTAATAACT	60
TTTTTACAGA CGATAACCTT GTCTAATGTC TGAGTCGAGG ATCATCAATT CCGGCTTGCC	120
ATCCTGGCTC ACTCTTAGTA ACTTTGCCG GCGAATGATG AGGAGATTAA GA	172

## (2) INFORMATION FOR SEQ ID NO:31:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 107 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

TAAAACTTAT ACAGAGTTAC ACTTTCTTAC ATAACGCCTG CTAAATTATG AGTATTTCT 60  
 AAACCGCACT CATAATTGAGTCATTTG AAAAGGAAGT CATTATG 107

(2) INFORMATION FOR SEQ ID NO:32:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 76 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Met	Leu	Lys	Asn	Leu	Ala	Lys	Leu	Asp	Gln	Thr	Glu	Met	Asp	Lys	Val
1				5						10				15	
Asn	Val	Asp	Leu	Ala	Ala	Ala	Gly	Val	Ala	Phe	Lys	Glu	Arg	Tyr	Asn
	20						25				30				
Met	Pro	Val	Ile	Ala	Glu	Ala	Val	Glu	Arg	Glu	Gln	Pro	Glu	His	Leu
	35					40					45				
Arg	Ser	Trp	Phe	Arg	Glu	Arg	Leu	Ile	Ala	His	Arg	Leu	Ala	Ser	Val
	50				55					60					
Asn	Leu	Ser	Arg	Leu	Pro	Tyr	Glu	Pro	Lys	Leu	Lys				
	65				70				75						

(2) INFORMATION FOR SEQ ID NO:33:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 40 amino acids
- (B) TYPE: amino acid

(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Met Leu Lys Asn Leu Ala Lys Leu Asp Gln Thr Glu Met Asp Lys Val  
1 5 10 15

Asn Val Asp Leu Ala Ala Gly Val Ala Phe Lys Glu Ala Tyr Asn  
20 25 30

Met Pro Val Ile Ala Glu Ala Val  
35 40

(2) INFORMATION FOR SEQ ID NO:34:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 57 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

ATGCTGAAAA ACCTGGCTAA ACTGGATCAG ACTGAAATGG ATAAAGTAA CGTTGAT

57

(2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 57 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

CTGGCTGCTG CTGGTGTGCT TTTTAAAGAA CGTTATAACA TGCCGGTTAT TGCTGAA

57

## (2) INFORMATION FOR SEQ ID NO:36:

*BB*

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 33 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

ATGATGAGGA GATTACATAT GCTGAAGAAT CTG

33

## (2) INFORMATION FOR SEQ ID NO:37:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 51 base pairs
  - (B) TYPE: nucleic acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

GAGGAATTCTG GCTTTTTGCGAATTCCCTGGCCCTAGG AGATCTCAGCT

51

## (2) INFORMATION FOR SEQ ID NO:38:

- (i) SEQUENCE CHARACTERISTICS:
  - (A) LENGTH: 137 amino acids
  - (B) TYPE: amino acid
  - (C) STRANDEDNESS: single
  - (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Met Thr Ser Arg Arg Asp Trp Gln Leu Gln Gln Leu Gly Ile Thr Gln  
1 5 10 15

Trp Ser Leu Arg Arg Pro Gly Ala Leu Gln Gly Glu Ile Ala Ile Ala  
20 25 30

Ile Pro Ala His Val Arg Leu Val Met Val Ala Asn Asp Leu Pro Ala  
35 40 45

Leu Thr Asp Pro Leu Val Ser Asp Val Leu Arg Ala Leu Thr Val Ser  
50 55 60

Pro Asp Gln Val Leu Gln Leu Thr Pro Glu Lys Ile Ala Met Leu Pro  
65 70 75 80

Gln Gly Ser His Cys Asn Ser Trp Arg Leu Gly Thr Asp Glu Pro Leu  
85 90 95

Ser Leu Glu Gly Ala Gln Val Ala Ser Pro Ala Leu Thr Asp Leu Arg  
100 105 110

Ala Asn Pro Thr Ala Arg Ala Ala Leu Trp Gln Gln Ile Cys Thr Tyr  
115 120 125

Glu His Asp Phe Phe Pro Gly Asn Asp  
130 135

(2) INFORMATION FOR SEQ ID NO:39:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 411 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

ATGACATCCC GACGAGACTG GCAGTTACAG CAACTGGCA TTACCCAGTG GTCGCTGCGT 60  
 CGCCCTGGCG CGTTGCAGGG CGAGATTGCC ATTGCGATCC CGGCACACGT CCGTCTGGTG 120  
 ATGGTGGCAA ACGATCTTCC CGCCCTGACT GATCCTTAG TGAGCGATGT TCTGCGCGCA 180  
 TTAACCGTCA GCCCCGACCA GGTGCTGCAA CTGACGCCAG AAAAAATCGC GATGCTGCCG 240  
 CAAGGCAGTC ACTGCAACAG TTGGCGGTTG GGTACTGACG AACCGCTATC ACTGGAAGGC 300  
 GCTCAGGTGG CATCACCGGC GCTCACCGAT TTACGGCAA ACCCAACGGC ACGGCCGCG 360  
 TTATGGCAAC AAATTTGCAC ATATGAACAC GATTCTTCC CTGGAAACGA C 411

## (2) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 77 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

GGCGATTATA GCCATATGTT GGCGCGGTAT CGACGAATTT GCTATATTTG CGCCCTGAC 60  
 AACAGGAGCG ATTGCT 77

## (2) INFORMATION FOR SEQ ID NO:41:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 103 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

TGATTTACCG GCAGCTTACC ACATTGAACA ACGGCCAC GCCTTCCGT GGAGTGAAAA 60  
AACGTTTGCC AGCAACCAGG GCGAGCGTTA TCTCAACTTT CAG 103

## (2) INFORMATION FOR SEQ ID NO:42:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 27 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

GATTCCATAT GACATCCCGA CGAGACT 27

## (2) INFORMATION FOR SEQ ID NO:43:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 30 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

GACTGGATCC CTGCAGGCCG GTGAATGAGT 30

## (2) INFORMATION FOR SEQ ID NO:44:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 17 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

Leu Gly Thr Asp Glu Pro Leu Ser Leu Glu Glu Ala Gln Val Ala Ser  
1 5 10 15

Pro

(2) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Ala Ala Leu Trp Gln Gln Ile Cys Thr Tyr Glu His Asp Phe Phe Pro  
1 5 10 15

Ala

(2) INFORMATION FOR SEQ ID NO:46:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 32 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

CAACAGGAGC GATTCCATAT GACATCCCGA CG

(2) INFORMATION FOR SEQ ID NO:47:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 31 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

GATTCGGATC CCTGCAGGCC GGTGAATGAG T

31

(2) INFORMATION FOR SEQ ID NO:48:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 30 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

CCCCACATAT GAAAAACGCG ACGTTCTACC

30

(2) INFORMATION FOR SEQ ID NO:49:

(i) SEQUENCE CHARACTERISTICS:  
(A) LENGTH: 28 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: single  
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

ACCCGGATCC AAACTGCCGG TGACATTC

28

## (2) INFORMATION FOR SEQ ID NO:50:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 441 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

ATGAAAAACG CGACGTTCTA CCTTCTGGAC AATGACACCA CCGTCGATGG CTTAAGCGCC	60
GTTGAGCACC TGGTGTGTGA AATTGCCGCA GAACGTTGGC GCAGCGGTAA GCGCGTGCTC	120
ATCGCCTGTG AAGATGAAAA GCAGGCTTAC GCCCTGGATG AAGCCCTGTG GGCGCGTCCG	180
GCAGAAAGCT TTGTTCCGCA TAATTTAGCG GGAGAAGGAC CGCGCGGCGG TGTACCGGTG	240
GAGATCGCCT GGCGCAAAA GCGTAGCAGC AGCCGGCGCG ATATATTGAT TAGTCTGCGA	300
ACAAGCTTTG CAGATTTGC CACCGCTTT ACAGAAGTGG TAGACTTCGT TCCTCATGAA	360
GATTCTCTGA ACAACTGGC GCGCGAACGC TATAAAGCCT ACCGCGTGGC TGGTTCAAC	420
CTGAATAACGG CAACTTGGAA A	441

## (2) INFORMATION FOR SEQ ID NO:51:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 175 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

## (ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

TAACGGCGAA GAGTAATTGC GTCAGGCAAG GCTGTTATTG CCGGATGCGG CGTGAACGCC 60  
 TTATCCGACC TACACAGCAC TGAACTCGTA GGCCTGATAA GACACAACAG CGTCGCATCA 120  
 GGCCTGCGG TGTATACCTG ATGCGTATTAAATCCACCA CAAGAAGCCC CATT 175

## (2) INFORMATION FOR SEQ ID NO:52:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 100 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

TAATGGAAAA GACATATAAC CCACAAGATA TCGAACAGCC GCTTTACGAG CACTGGGAAA 60  
 AAAGCCAGGA AAGTTCTGC ATCATGATCC CGCCGCCGAA 100

## (2) INFORMATION FOR SEQ ID NO:53:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 147 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

## (xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

Met	Lys	Asp	Ala	Thr	Phe	Tyr	Leu	Leu	Asp	Asn	Asp	Thr	Thr	Val	Asp
1					5				10					15	
Gly	Leu	Ser	Ala	Val	Glu	Gln	Leu	Val	Cys	Glu	Ile	Ala	Ala	Glu	Arg
								25					30		

Trp Arg Ser Gly Lys Arg Val Leu Ile Ala Cys Glu Asp Glu Lys Gln  
 35 40 45

Ala Tyr Arg Leu Asp Glu Ala Leu Trp Ala Arg Pro Ala Glu Ser Phe  
 50 55 60

Val Pro His Asn Leu Ala Gly Glu Gly Pro Arg Gly Gly Ala Pro Val  
 65 70 75 80

Glu Ile Ala Trp Pro Gln Lys Arg Ser Ser Arg Arg Asp Ile Leu  
 85 90 95

Ile Ser Leu Arg Thr Ser Phe Ala Asp Phe Ala Thr Ala Phe Thr Glu  
 100 105 110

Val Val Asp Phe Val Pro Tyr Glu Asp Ser Leu Lys Gln Leu Ala Arg  
 115 120 125

Glu Arg Tyr Lys Ala Tyr Arg Val Ala Gly Phe Asn Leu Asn Thr Ala  
 130 135 140

Thr Trp Lys  
 145

## (2) INFORMATION FOR SEQ ID NO:54:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 29 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

Met Lys Asn Ala Thr Phe Tyr Leu Leu Asp Asn Asp Thr Thr Val Asp  
 1 5 10 15

Gly Leu Ser Ala Val Glu Gln Leu Val Xaa Glu Ile Ala  
 20 25

(2) INFORMATION FOR SEQ ID NO:55:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 9 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

Val Leu Ile Ala Xaa Glu Asp Glu Lys  
1 5

(2) INFORMATION FOR SEQ ID NO:56:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 21 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

Leu Asp Glu Ala Leu Trp Ala Ala Pro Ala Glu Ser Phe Val Pro His  
1 5 10 15

Asn Leu Ala Gly Glu  
20

(2) INFORMATION FOR SEQ ID NO:57:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Gly Gly Ala Pro Val Glu Ile Ala Trp Pro  
1 5 10

(2) INFORMATION FOR SEQ ID NO:58:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 8 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

Gly Phe Asn Leu Asn Thr Ala Thr  
1 5

(2) INFORMATION FOR SEQ ID NO:59:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 30 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

CCCCACATAT GAAAAACGCG ACGTTCTACC

30

(2) INFORMATION FOR SEQ ID NO:60:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 28 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single

104-31

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA (genomic)

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:

ACCCGGATCC AAACTGCCGG TGACGTTC

28